



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/657,206

09/09/2003

Chae-Whan Lim

45682

9142

7590

08/06/2008

Peter L. Kendall
Roylance, Abrams, Berdo & Goodman, L.L.P.
Suite 600
1300 19th Street, N.W.
Washington, DC 20036

EXAMINER

LIEW, ALEX KOK SOON

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

08/06/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/657,206	Applicant(s) LIM ET AL.	
	Examiner ALEX LIEW	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-14 and 23-33 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 6, 21 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The amendment filed on 3/28/08 is entered and made of record.

2. **Response to Applicant's Arguments:**

I. One page 4, the applicant stated:

... O'Dell is not analogous to a recognition error processor for correcting or replacing erroneously recognized character data. O'Dell merely discloses how a user selects a complete character and the selected character is moved into a text portion so that an input and encoding process may begin with a new character. There is nothing in O'Dell that discloses or teaches a recognition error processor for correcting and replacing erroneously recognized character data. A user of O'Dell selects a complete character from the list of selections.

The examiner agrees; an updated search reveals Yokoto (US pat no 6,334,003) discloses limitations of claim 15. Yokoto discloses a method for enabling a terminal device to recognize a character image from a document image, comprising the steps of:

designating an operating mode for image character recognition (column 7, lines 22-34, there are four modes, mode for character string is traced for new character entry, mode for character is written for new entry, mode for character string is traced for correction and mode for character is written for correction entry);

selecting and analyzing the image character recognition in image character image recognition mode, classifying the character image into at least one character block (figure 7, 1 'ABCD 03-000-0000' are selected, also figure 3, A2);

recognizing the selected image character image (figure 3, A2 executes character recognition); and

selecting erroneously recognized character data and correcting the erroneously recognized character data with input character data in a correction mode (figure 7, (3) shows 'BC' are selected for correction and figure 3, A6).

Yokota does not disclose analyzing pixels of the document image in the document recognition mode, classifying the document image into at least one Character Block and at least one Background Block on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image.

Cullen (US pat no 5,465,304), cited in previous office action, discloses analyzing pixels of the document image in the document recognition mode, classifying the document image into at least one Character Block and at least one Background Block on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image (figure 2a and 2b, 220 is one character block, the background block are the pixels which are not 'black' or not dark in color, column 7, lines 46-53, the term compression used in the reference is read as binarizing); and a character recognizer for recognizing the pre-processed document image and converting the recognized pre-processed document image into character data (column 4 lines 37-57, after segmentation is done, which is the creation of individual blocks, character recognition is performed on each block, transforming those image data into character data). One skilled in the art would include converting image character data to binary data because to reduce amount of information required to store image characters, saving storage space and processing time.

Yokota and Cullen do not disclose storing the recognized character data in a storage medium. Nicholson (US pat no 6,661,919) discloses storing the recognized character data in a storage medium (column 7, lines 27-31). One skilled in the art would include

Art Unit: 2624

storing recognized data because it can be referred back to when recognizing the same character in future functions.

II. On page 5, the applicant stated:

With respect to claim 23, the combination of Cullen, O'Deil and Berkeley, taken singly or in combination, do not disclose or teach a display unit having a first display area, a second display area, a third display area and another display area where character data is displayed on the first display area, SAVE items associated with the character data are displayed on the second display area and the pre-processed document image is displayed on the first display area, as claimed.

The examiner agrees; examiner cannot find all four type displays in a single reference.

3. Allowable Claims

Claims 9-14 and 23-33 are allowable.

With regards to claim 9, the examiner cannot find any suggestions/motivations disclosing a display unit having a *first display* area for displaying an input document image and character data recognized from the input document image, a *second display* area for displaying SAVE items, a *third area* for displaying character data of a selected SAVE item, and another display area for displaying an operating mode menu in combination with the rest of the limitations of claim 9.

With regards to claim 28, see the rationale for claim 9.

Art Unit: 2624

With regards to claim 23, the examiner cannot find any suggestions/motivations disclosing a display unit having a *first display* area for displaying an input document image and character data recognized from the input document image, a *second display* area for displaying SAVE items, a *third area* for displaying character data of a selected SAVE item, and another display area for displaying an operating mode menu and repeating the steps (a) to (d) and storing selected SAVE items and character data corresponding to the selected SAVE items in combination with the rest of the limitations of claim 9.

Sakamoto (US pat no 5,389,745): Sakamoto discloses *first display* area for displaying character data recognized from the input document image, a *second display* area for displaying SAVE items, a *third area* for displaying character data of a selected SAVE item (see figure 7, the top areas of 41 are read as the first display, areas 40 is read as the third area), But Sakamoto does not discloses displaying an operating menu.

Claim Objections

Claims 6, 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With regards to claim 6, the examiner's search cannot find any suggestions disclosing a speech recognizer for generating an input signal to select a save item in the storage

Art Unit: 2624

mode in combination with the rest of the limitation of claim 6 and claims 1 and 5. In addition, Pearson (US pat no 6,705,872) discloses an input saving command using speech recognition used in the communication art (see col. 16 lines 15 – 20), but not in pattern recognition.

With regards to claims 22, see the rationale for claim 6.

With regards to claim 21, the examiner's search does not show any applicable prior art and / or suggestions disclosing displaying a handwritten character recognition window when correction character data is not contained in the displayed candidate characters in combination with its intervening claims and the rest of the limitations of claims 15, 17, 18, and 21.

With regards to claim 21, the examiner's search does not show any applicable prior art and / or suggestions disclosing displaying a handwritten character recognition window when correction character data is not contained in the displayed candidate characters in combination with its intervening claims and the rest of the limitations of claim 21.

With regards to claims 26 and 33, see the rationale for claim 21.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 5, 7, 15, 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota ('003) in view of Cullen ('304) and Nicholson ('919).

With regards to claim 15, Yokoto discloses a method for enabling a terminal device to recognize a character image from a document image, comprising the steps of:

designating an operating mode for image character recognition (column 7, lines 22-34, there are four modes, mode for character string is traced for new character entry, mode for character is written for new entry, mode for character string is traced for correction and mode for character is written for correction entry);

selecting and analyzing the image character recognition in image character image recognition mode, classifying the character image into at least one character block (figure 7, 1 'ABCD 03-000-0000' are selected, also figure 3, A2);

recognizing the selected image character image (figure 3, A2 executes character recognition); and

selecting erroneously recognized character data and correcting the erroneously recognized character data with input character data in a correction mode (figure 7, (3) shows 'BC' are selected for correction and figure 3, A6).

Yokota does not disclose analyzing pixels of the document image in the document recognition mode, classifying the document image into at least one Character Block and at least one Background Block on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image.

Cullen discloses analyzing pixels of the document image in the document recognition mode, classifying the document image into at least one Character Block and at least one Background Block on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image (figure 2a and 2b, 220 is one character block, the background block are the pixels which are not 'black' or not dark in color, column 7, lines 46-53, the term compression used in the reference is read as binarizing); and a character recognizer for recognizing the pre-processed document image and converting the recognized pre-processed document image into character data (column 4 lines 37-57, after segmentation is done, which is the creation of individual blocks, character recognition is performed on each block, transforming those image data into character data). One skilled in the art would include converting image character data to binary data because to reduce amount of information required to store image characters, saving storage space and processing time.

Yokota and Cullen do not disclose storing the recognized character data in a storage medium. Nicholson discloses storing the recognized character data in a storage

medium (column 7, lines 27-31). One skilled in the art would include storing recognized data because it can be referred back to when recognizing the same character in future functions.

With regards to claim 1, see the rationale for claim 15. In addition, Nicholson discloses a displaying unit for displaying the document image and character data generated (figure 1, 16 is the displaying unit and column 2, lines 43-45).

With regards to claim 2, Cullen discloses

a skew correction part for classifying stripes having a present length or above from the document image, calculating direction angles of the classified stripes, measuring a skew of an object, deciding a skew angle corresponding to the measured skew and correcting the object skew (see column 6, lines 31-41, the skew angle of a rectangle is calculated and then based on the calculated skew angle, appropriate correction is performed),

an Region Of Contents (ROC) extension part for classifying the document image in which the object skew is corrected into CBs and BBs, searching for positions of the CBs to extract the CBs and extending a size of an image of the extracted CBs to a size of an input image (see column 6, lines 42-57, after skew correction the system reclassifies the character and extends the length of the block is they are connected) and

an image binarization part for comparing pixels of the CBs for the document image with a pixel threshold value, binarizing the pixels of the CBs into pixels having

Art Unit: 2624

brightness values for character and background pixels, and binarizing pixel of the BBs into pixels having a brightness value for background pixels (see column 7, lines 46-53, the term compression used in the reference is read as binarizing, the dark pixels belongs to the character and white or bright pixels belongs to the background).

One skilled in the art would include a skew correction part because to avoid error misrecognizing slanted letters, improving recognition accuracy.

With regards to claim 5, an extension to claim 1, Nicholson discloses a camera for detecting the document and generating the document image (figure 1, 28). One skilled in the art would include a camera because to capture all the pixel values at the same time, to increase speed as compared to a scanner.

With regards to claim 7, Yokota discloses character recognizer comprises a handwritten character recognizer for recognizing a received handwritten character image in the correction mode and to correct (figure 3, A5 to A9) and correcting the erroneously recognized character data. Cullen discloses converting the recognized handwritten character image into correction character data (column 4 lines 37-57).

With regards to claim 16, see the rationale for claim 2.

With regards to claims 19 and 20, see the rationale and rejection for claim 7.

3. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota ('003) in view of Cullen ('304) and Nicholson ('919) as applied to claim 2 further in view of Li (US pat no 7,257,273).

With regards to claim 3, Yokoto, Cullen and Nicholson disclose all the limitations of claim 2, but do not to disclose blurred-image detection. Li discloses a blurred-image detection part for any input digital image by calculating an average energy ratio for the input image, comparing the average energy ratio with a predetermined threshold value and determining whether the input image is blurred according to a result of the comparison (see figure 6, element 608 determines the amount of blur in an image, which is read as the average energy ratio, and element 610 determines if there is a blur in the image or not by comparing percentage of blur to a threshold). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include image blur detection step because to allow the system to take appropriate algorithm to correct the blur in the image to minimize character recognition errors.

With regards to claims 17, see the rationale and rejection for claim 3.

4. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota ('003) in view of Cullen ('304) and Nicholson ('919) as applied to claim 2 further in view of Komori (US pat no 4,180,798).

Art Unit: 2624

With regards to claim 4, Yokoto, Cullen and Nicholson disclose all the limitations of claim 2, but do not to disclose noise reduction step. Komori discloses a pre-processing unit for reducing noise of the character image (see column 1, lines 24-29). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include noise reduction part because to improve the quality of the character image to minimize character recognition errors.

With regards to claims 18, see the rationale and rejection for claim 4.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota ('003) in view of Cullen ('304) and Nicholson ('919) as applied to claim 5 further in view of Kaplan (US pat no 4,799,077).

With regards to claim 8, Yokoto, Cullen and Nicholson disclose all the limitations of claim 2, but do not to disclose camera adjusting a focal distance and exposure time. Kaplan discloses a step to adjust the camera's focal distance and exposure time (see col. 2 lines 36 – 39 and fig 1). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include camera adjusting a focal distance and exposure time because to avoid having the capture image to blur, so there is no need of image analysis and processing to correct the blur in the image to save time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX LIEW whose telephone number is (571)272-8623 or cell (917)763-1192. The examiner can be reached anytime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
Supervisory Patent Examiner, Art
Unit 2624

Alex Liew
AU2624
8/4/08